

SIZE, FREQUENCY AND LOCATION OF SAMPLING AND TESTING TABLES
PORTLAND CEMENT CONCRETE (6) - PAVEMENT

				POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS			
MATERIAL OR PRODUCT		TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	REMARKS
AGGREGATE	COARSE AGGREGATE	LA Rattler (500) Rev.) 6	211	See Note (3)	See Note (2)	1 for every 500 cu. yds. 1 per day min. See Notes (1)(7). If production is less than 300 cu. yds, 1 per accumulative 300 cu. yds.	One of the following locations listed in order of preference: a. Belt from weigh hopper to central or transit mixer. b. Belt which feeds batch plant bins immediately preceding the weigh hopper. c. Discharge gate of weigh hopper. A single sample 400+ lbs. into loader or dump truck; split to test portion required for grading analysis. d. Discharge gates of bins feeding the weigh hopper at batch plant	Recommend 1 acceptance test per day if 3 consecutive tests over 80
		Cleanness value	227					
	FINE AGGREGATE	Colometric Test	213	See Note (3)	See Note (2)	Only if initial test shows critical or contamination is suspected	The location and method of sampling are to be determined and agreed upon by the engineer and the contractor. Once selected, the location and method of sampling are not to be changed during the life of a project, or so long as there is no change in plant's configuration or operation.	Recommend 1 acceptance Test per day if 3 consecutive tests over 80
		Mortar Strength	515					
Sand Equivalent		217						
	Durability	229						
COARSE & FINE AGGREGATE	Specific gravity & absorption	206 & 207	See Note (3)	See Note (2)	When aggregate changed. See Note 7	Same as Fine Aggregate (above)		
		214						
	Soundness	202						
	Sieve Analysis							
	Freeze-Thaw	528	See Note (4)	Non See Note (5)				
	Moisture	223 &/ or 226		None	1 for every 500 cu. yds. 1 per day min. See Notes (1) (7). If production less than 300 cu. Yds, 1 per accumulative 300 cu. yd.	Same Fine Aggregate (above)	Sample must be in an airtight container	
CEMENT		Compliance w/Std. Specs. & Special Provisions		8 lb.	None with Certificate of Compliance (See REMARKS.)	1 for every 500 cu. yds. 1 per min. See Notes (1)(7). If production is less than 300 cu. yds, 1 per accumulative 300 cu. yd.	Weigh hopper or in the feed line immediately in advance of the hopper	If no Certificate of Compliance, sample at least 14 days prior to use for previously tested brands, 35 days for untested brands.
WATER		Compliance with Sec. 90 of Std. Specs. & Special Provisions	405	Clean 1/2 gallon plastic jug with lined sealed lid	At point of use (See REMARKS)KS)	As required for acceptance (See REMARKS)	At point of use	City water supplies for domestic use usually need not be tested unless suspected of high chloride or sulfate content. On-the-job wells are to be tested.

EXHIBIT 16-R
Local Assistance Procedures Manual
Size Frequency and Location of Sampling and Testing Tables

AD MIXTURES	Air Entraining Agent	Air entraining properties, chloride identification	ASTM C 260	1-quart can or plastic bottle of liquid, 2 lbs. of powder	Samples must reach testing lab at least 1 week prior to use.	As required for information	Sample must reach testing lab at least 1 week prior to use	
	Water Reducers Set Retarders	Claimed properties, chloride identification	ASTM C 494	1-quart can of liquid, 2 lbs. of powder	Samples must reach Testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	As new supplies arrive on the job or each time brand is changed.	Samples must reach testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	
CONCRETE	Yield		518	See test method See Note (8)		One for each 4 hours production	At point it is deposited on the grade	If yield test used for payment, 1 per each 1,500 cu. yds.; min. of 2 per mix design per job.
	Ball Penetration		533			When test specimen is fabricated & when consistency or uniformity is questionable. Min. 2 per day	At point concrete is deposited in the work and from different portions of the batch to check uniformity.	
	Modules of rupture		523	1 set of 3 beams 6" x 6" x 34" each	See California Test 539	One set for each 4,000 cubic yards	See California Test 539	Recommend min. 2 sets per shift. Normally, from each set, break 1 beam at 7 days, 1 beam at 10 days, and 3rd beam as required 50% decrease after 10 sets.
	Air Content		504	Approx. 1/2 cubic foot		As required for information; min. once every 4 hours. Each time 518 is performed.	At point deposited on the grade.	Where specified for freeze thaw resistance, acceptance testing shall not be less than once every hour.
	Coarse agg. per cu. ft. of concrete		529			As required to assure uniformity of concrete. See Std. Specs., Section 90	1st and last 4th of batch	
	Dimensions					As required for information. See Std. Specs. Section 40		
	PIGMENTED CURING COMPOUND	Compliance (See Std. Specs. & Special Prov.)		1 Quart (Can)		As new shipments arrive on job or each time brand is changed	From spray nozzle or feed line at point of field application.	

- Note:
- (1) Not required if P.C. from same source is being used on other work and test is being made there. No need to duplicate the test just for the sake of record. The actual test results may be used anywhere they are applicable.
 - (2) From material site or stockpile; 60 days prior to use.
 - (3) 150# of 2 1/2" x 1 1/2" - 100# of 1 1/2 x 3/4 - 75# of 3/4" x No. 4-75# of pea gravel -50# of sand. This material for test numbers 202, 206, 207, 211, 213, 214, 217, 227, 229 and 515.
 - (4) See California Test No. 528 or contact the Division of New Technology, Materials and Research.
 - (5) Contact District Materials Engineer for special sampling procedures at least 120 calendar days before intended use.
 - (6) For lightweight concrete, see Standard Specifications and Special Provisions.
 - (7) When prior test results are acceptable and material appears to be of uniform composition, a max. of 2 tests per day will satisfy acceptance test requirements for this material. Adjustments to testing frequencies shall be documented in the project files.
 - (8) No deductions for cement content will be made based on the results of California test 518.

PORTLAND CEMENT CONCRETE (6) - BRIDGES & MAJOR STRUCTURES (R.C.B., P.C.C. Arch Culverts, Retaining Walls)

				POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS			
MATERIAL OR PRODUCT		TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	REMARKS
AGGREGATE	COARSE AGGREGATE	LA Rattler (500) Rev.)	211	See Note (3)	See Note (2)	1 for every 500 cu. yds. 1 per day min. See Notes (1)(7). If production is less than 300 cu. yds, 1 per accumulative 300 cu. yds.	One of the following locations listed in order of preference: a. Belt from weigh hopper to central or transit mixer. b. Belt which feeds batch plant bins immediately preceding the weigh hopper. c. Discharge gate of weigh hopper. A single sample 400+ lbs. into loader or dump truck; split to test portion required for grading analysis. d. Discharge gates of bins feeding the weigh hopper at batch plant	Recommend 1 acceptance test per day if 3 consecutive tests over 80
		Cleanness Value	227					
	FINE AGGREGATE	Colometric test	213	See Note (3)	See Note (2)	Only if initial test shows critical or contamination is suspected 1 for every 500 cu. yds. See Notes (1) (7). If production is less than 300 cu. yds., 1 per accumulative 300 cu. yds.	The location and method of sampling are to be determined and agreed upon by the engineer and the contractor. Once selected, the location and method of sampling are not to be changed during the life of a project, or so long as there is no change in plant's configuration or operation.	Recommend 1 acceptance test per day if 3 consecutive tests over 80
		Mortar Strength	515					
		Sand Equivalent	217					
		Durability	229					
	COARSE & FINE AGGREGATE	Specific gravity & absorption	206 & 207	See Note (3)	See Note (2)	When aggregate changed. See Note (7)	As per potential source list	
		Soundness	214					
		Sieve Analysis	202					
		Freeze-Thaw	528	See Note (4)	See Note (5)	1 for every 500 cu. yds. 1 per day min. See Notes (1)(7). If production less than 300 cu. yds, 1 per accumulative 300 cu. yd.	Same Fine Aggregate (above)	
Moisture	223 &/ or 226		None	Same Fine Aggregate (above)	Sample must be in an airtight container			
CEMENT		Compliance w/Std. Specs. & Special Provisions		8 lb.	None with Certificate of Compliance (See REMARKS.)	1 for every 500 cu. yds. 1 per min. See Notes (1)(7). If production is less than 300 cu. yds, 1 per accumulative 300 cu. yd.	Weigh hopper or in the feed line immediately in advance of the hopper	If no Certificate of Compliance, sample at least 14 days prior to use for previously tested brands, 35 days for untested brands.
WATER		Compliance with Sec. 90 of Std. Specs. & Special Provisions	405	1/2 gallon plastic jug with lined sealed lid	At point of use (See REMARKS.)	As required for acceptance (See REMARKS)	At point of use	City water supplies for domestic use need not be tested unless suspected of high chloride or sulfate content. On-the-job wells are to be tested.

EXHIBIT 16-R
Local Assistance Procedures Manual
Size Frequency and Location of Sampling and Testing Tables

AD MIXTURES	Air Entraining Agent	Air entraining properties, chloride identification	ASTM C 260	1-quart can or plastic bottle of liquid, 2 lbs. of powder	Samples must reach testing lab at least 1 wk prior to use.	As required for information	Sample must reach testing lab at least 1 week prior to use	Check with DNTM&R for brands which may be used prior to sampling and testing when properly certified
	Water Reducers Set Retarder	Claimed properties, chloride identification	ASTM C 494	1-quart can of liquid, 2 lbs. of powder	Samples must reach testing lab at least 1 wk prior to use. Untested brands require 5 wks prior to use.	As new supplies arrive on the job or each time brand is changed.	Samples must reach testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	
CONCRETE	Yield		518	Approx. 1 cu. ft. See Note (8)	See California Test 539	As necessary to assure accuracy of mix design; min. 2 per each mix design	At point it is deposited in the work	
	Ball Penetration		533			When test specimen is fabricated & when consistency or uniformity is questionable. Min. 2 per day	At point concrete is deposited in the work and from different portion of the batch to check uniformity	
	Compressive Strength		539 & 540	1 set of 2-6" x 12" cylinders for each test age		1 set for approx. every 300 cu. yds. concrete or as required for acceptance. Min. 1 set per job & class of concrete for each days production.	At point deposited in the work	For trial batches, see Std. Specs. or job Special Provisions and Section 8-03 of this manual.
	Air Content		504			A Min. once every 4 hours of production and when test specimens are fabricated	At point deposited on the grade.	Where air is specified for freeze-thaw resistance, a min. of 1 per each 30 cu. yds.
	Coarse agg. per cu. ft. of concrete		529			As required to assure uniformity of concrete. See Std. Specs., Section 90	1st and last 4th of batch	
	Dimensions					As required for information. See Std. Specs. Sec. 40		
PRESTRESSED TENDON GROUT	Efflux time		541	1-6" x 12" cylinder mold can	From batch immediately after mixing for prequalification; thereafter from outlet end of tendon &/or storage tank.	At the start of each day's work and thereafter 1 test per each 5% of ducts		Repeat acceptance tests whenever source of material is changed
PIGMENTED CURING COMPOUND	Compliance (See Std. Specs. & Special Prov.)			1 Quart (Can)		Periodically to ensure compliance	From storage drums	For chlorinated rubber base type, sample and test if not previously inspected at the source.

- Note:
- (1) Not required if P.C. from same source is being used on other work and test is being made there. No need to duplicate the test just for the sake of record. The actual test results may be used anywhere they are applicable.
 - (2) From material site or stockpile; 60 days prior to use.
 - (3) 150# of 2 1/2 x 1 1/2"-100# of 1 1/2 x 3/4 - 75# of 3/4" x No. 4-75# of pea gravel -50# of sand. This material for test numbers 202, 206, 207, 211, 213, 214, 217, 227, 229 and 515.
 - (4) See California Test 528 or contact the Division of New Technology, Materials and Research.
 - (5) Contact District Materials Engineer for special sampling procedures at least 120 calendar days before intended use.
 - (6) For lightweight concrete, see Standard Specifications and Special Provisions.
 - (7) When prior test results are acceptable and material appears to be of uniform composition, a max. of 2 tests per day will satisfy acceptance test requirements for this material. Adjustments to testing frequencies shall be documented in the project files.
 - (8) No deductions for cement content will be made based on the results of California Test 518.

PORTLAND CEMENT CONCRETE MISCELLANEOUS CONCRETE
See Notes (6) and (9)

				POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS			
MATERIAL OR PRODUCT		TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	REMARKS
AGGREGATE	COARSE AGGREGATE	LA Rattler (500) Rev.)	211	See Note (3)	See Note (2)	1 for every 500 cu. yds. 1 per day min. See Notes (1)(7). If production is less than 300 cu. yds, 1 per accumulative 300 cu. yds.	One of the following locations listed in order of preference: a. Belt from weigh hopper to central or transit mixer. b. Belt which feeds batch plant bins immediately preceding the weigh hopper. c. Discharge gate of weigh hopper. A single sample 400+ lbs. into loader or dump truck; split to test portion required for grading analysis. d. Discharge gates of bins feeding the weigh hopper at batch plant	Recommend 1 acceptance test per day if 3 consecutive tests over 80
		Cleanness Value	227					
	FINE AGGREGATE	Colometric Test	213	See Note (3)	See Note (2)	Only if initial test shows critical or contamination is suspected 1 for every 500 cu. yds. See Notes (1) (7). If production is less than 300 cu. yds., 1 per accumulative 300 cu. yds.	The location and method of sampling are to be determined and agreed upon by the engineer and the contractor. Once selected, the location and method of sampling are not to be changed during the life of a project, or so long as there is no change in plant's configuration or operation.	Recommend 1 acceptance test per day if 3 consecutive tests over 80
		Mortar Strength	515					
		Sand Equivalent	217					
		Durability	229					
	COARSE & FINE AGGREGATE	Specific gravity & absorption	206 & 207	See Note (3)	See Note (2)	When aggregate changed. 1 for every 500 cu. yds. 1 per day min. See Notes (1)(7). If production less than 300 cu. yds, 1 per accumulative 300 cu. yd.	Same as Fine Aggregate (above)	
		Soundness	214					
		Sieve Analysis	202	See Note (4)	See Note (5)	1 for every 500 cu. yds. 1 per day min. See Notes (1) (7). If production less than 300 cu. yds, 1 per accumulative 300 cu. yd.		
		Freeze-Thaw	528					
Moisture	223 &/or 226	None						
CEMENT (6)		Compliance w/Std. Specs. & Special Provisions		8 lb.	None with Certificate of Compliance (See REMARKS.)	1 for each 500 cu. yds. used. 1 per day min.: 2 per day max. See Note (1). See Section 8-02 of this Construction Manual	From weigh hopper, screw leading to weigh hopper	If no Certificate of Compliance, sample at least 14 days prior to use for previously tested brands, 35 days for untested brands.
WATER		Compliance with Sec. 90 of Std. Specs. & Special Provisions	405	1/2 gallon plastic jug with lined sealed lid	At point of use (See REMARKS.)	As required for acceptance (See REMARKS.)	At point of use	City water supplies for domestic use usually need not be tested unless suspected of high chloride or sulfate content. On-the-job wells are to be tested.

EXHIBIT 16-R
Local Assistance Procedures Manual
Size Frequency and Location of Sampling and Testing Tables

AD MIXTURES	Air Entraining Agent	Air entraining properties, chloride identification	ASTM C 260	1-quart can or plastic bottle of liquid, 2 lbs. of powder	Samples must reach testing lab at least 1 week prior to use.	As required for information	Samples must reach testing lab at least 1 week prior to use.	Check with DNTM&R for brands which may be used prior to sampling and testing when properly certified.
	Water Reducers Set Retarder	Claimed properties, chloride identification	ASTM C 494	1-quart can of liquid, 2 lbs. of powder	Samples must reach Testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	When new lots are to be used.	Samples must reach testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	
COMBINED MIX (6)	Yield Cement Factor		518	See test method See Note (8)		As necessary to assure accuracy of mix design	At point concrete is deposited in the work from different portions of the batch to check uniformity	If yield test used for payment, 1 per each 1,500 cu. yds.; min. of 2 per mix design per job.
	Ball Penetration		533			When test specimen is fabricated & when consistency or uniformity is questionable. Min. 2 per day		
	Compressive Strength		539 & 540	1 set of 2-6" x 12 cylinders		One set for each day when volume exceeds 25 cu. yd. (1) None if total days run less than 25 cu. yds.	At point deposited in work	
	Entrained Air		504	Approx. 1/2 cubic foot		As required for information	At point concrete is deposited in work	

- Note:
- (1) Not required if P.C. C. from same source is being used on other work and test is being made there. No need to duplicate the test just for the sake of record. The actual test results may be used anywhere they are applicable.
 - (2) From material site or stockpile; 60 days prior to use.
 - (3) 150# of 2 1/2" x 1 1/2 - 100# of 1 1/2 x 3/4 - 75# of 3/4" x No. 4-75# of pea gravel -50# of sand. This material for test numbers 202, 206, 207, 211, 213, 214, 217, 227, 229 and 515.
 - (4) See California Test 528 or contact the Division of New Technology, Materials and Research.
 - (5) Contact District Materials Engineer for special sampling procedures at least 120 calendar days before intended use.
 - (6) For minor concrete, sample and test only at Resident Engineer's discretion.
 - (7) When prior test results are acceptable and material appears to be of uniform composition, a max. of 2 tests per day will satisfy acceptance test requirements for this material. Adjustments to testing frequencies shall be documented in the project files.
 - (8) No deductions for cement content will be made based on the results of California test 518.
 - (9) For lightweight concrete, see Standard Specifications and Special Provisions.

ASPHALT CONCRETE (3)

MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
AGGREGATE PRIOR TO MIXING	LA Rattler (500) Rev.)	211	Type A & B UNPROCESSED 250# PROCESSED 50# of each bin size Open graded 50#	Materials site, stockpile, or plant (7)	As necessary for information and/or acceptance (8)	Plant bin prior to mixing (2) (7)	
	Specific gravity (coarse and fine aggregate)	206 & 208					
	CKE	303					
	Stabilometer	366					Not made on open graded. Performed on laboratory mixture.
	Swell	305					Performed on laboratory mixture
	Moist Vapor Susceptibility	307					Performed on laboratory mixture
	% Crushed Particles	205					
	Sieve Analysis	202					
	Sand Equivalent	217					
	Film Stripping	302					Made on open graded asphaltic concrete only
PAVING ASPHALT LIQUID ASPHALT ASPHALTIC EMULSION	In accordance with applicable Section of Std. Specs		Asphalt 1 quart can	Test only if no Certificate of Compliance. Asphalt line (6)	Once daily (6)	Asphalt line or distributor	
			Emulsion 1/2 gallon plastic jug	Test only if no certification of compliance. Emulsion Storage Tank	Each shipment	Emulsion Storage Tank or Distributor	

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COMPLETE MIXTURE	Swell	305	DGAC 15# carton		As necessary for information and/or acceptance		When less than a total of 500 tons is to be placed, sample and test only at Resident Engineers discretion. Total sample: DGAC: Four Cartons (about 60#) OGAC: Four 1 Qt. cans (about 14#)
	Moist, vapor susceptibility	307	OGAC 1 qt. can				
	Stabilometer	304					
	Sieve Analysis	202					
	Asphalt Content	310, 362 & 379			1 for each 500 ton; 2 per day minimum		
	Moisture	310 & 370				Completed pavement	
	In-Place Density	375	As specified or lot size		1 sample representing each 4 hours of production	As per California Test 375	
	Maximum Density	375	Two 15# cartons		As per California Test 375		

- Note:
- (1) On smaller projects being supplied from sources currently in use on larger projects, a copy of the acceptance test information on asphalt concrete aggregate is all that is required.
 - (2) For continuous mixing, sample from the combined feed in advance of mixing, for mixing, sample from hot bins.
 - (3) When special provisions state that production shall be "from commercial quality asphalt and aggregate" sample and test only at Resident Engineers discretion.
 - (4) Not required if P.C.C. from same source is being used on other work and test is being made there. No need to duplicate tests; results may be used anywhere they are applicable.
 - (5) When prior test results are acceptable and material appears to be of uniform composition, a max. of 2 tests per day will satisfy acceptance test requirements for this material. Adjustments to testing frequencies shall be documented in the project files.
 - (6) When continuous mixing plants used, sample and test for specific gravity at least monthly.
 - (7) When sampling for AC mix design (California Test 367), aggregate samples must be taken as described in Note 2.
 - (8) Refer to Standard Specifications, 39-3.03 "Proportioning" for frequency of AC mix design (California test 367) sampling.
 - (9) When prior test results are acceptable and material appears to be of uniform composition, a max. of 2 tests per day will satisfy acceptance test requirements for this item. Adjustments to testing frequencies shall be documented in the project files.

LEAN CONCRETE BASE				POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS		REMARKS
MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
AGGREGATE	Sand equivalent	217	100 lbs. for aggregate qualification	Material site or stockpile	1 sample for each 3,000 tons or 2,000 cu. yds. (1)	One of the following locations listed in order of preference: a. Belt from weigh hopper to central or transit mixer. b. Belt which feeds batch plant bins immediately preceding the weigh hopper. c. Discharge gate of weigh hopper. A single sample 400+ lbs. into loader or dump truck; split to test portion required for grading analysis. d. Discharge gates of bins feeding the weigh hopper at batch plant The location and method of sampling are to be determined and agreed upon by the engineer and the contractor. Once selected, the location and method of sampling are not to be changed during the life of a project, or so long as there is no change in plant's configuration or operation.	
	Sieve analysis	202 & 105					
	Compressive strength of laboratory mixtures	548	As required for method of test for acceptance tests.				
CEMENT	Compliance with Section 90 of Std. Spec.		8 lbs.	None with Certificate of Compliance (see REMARKS)	Each 120 tons of cement, 2 per day max.	Weigh hopper or screw leading to weigh hopper or from distributor if road-mixed.	If no Certificate of Compliance, sample at least 14 days prior to use for previously tested brands; 35 days for untested brands.
WATER	Compliance with Section 90 of Std. Spec.	405	Clean 1/2 gallon plastic jug with lined sealed lid.	At point of use(see REMARKS)		At point of use.	City water supplies for domestic use need not be tested unless suspected chlorine or sulfate content. On-the-job wells are to be tested
ADMIXTURES	Air Entraining Agents						Contact DNTM&R for information
	Retarders	Compliance with specifications	530 or 415	1 quart can or plastic bottle of liquid, 2 lbs. of powder	Each new lot of material brought to the job	Samples must reach testing lab at least 1 week prior to use. Untested brands require 5 weeks prior to use.	Contact DNTM&R for brands which may be used prior to sampling and testing when properly certified

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COMPLETED MIXTURE	Penetration	533			At least once for every 4 hours of production	At point concrete is deposited in the work	
	Entrained Air	504	Approx. 1/2 cu. ft.	Request laboratory to perform this test during aggregate qualification.	At least once for each day's production		
	Dimensions				As required		
CURING COMPOUND	Compliance with specifications		1 quart can		Each new lot of material brought to the job	From spray nozzle or feed line at point of field application	

NOTE; (1) If material is uniform and well within specification limits, the frequency is decreased to 1 a day unless source is changed. Adjustments to testing frequencies shall be documented in the project files.

CEMENT TREATED BASE ROAD MIX OR PLANT MIX

MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
AGGREGATE	R-value (with & without cement)	301	100 lbs. for aggregate qualification	Material site or stockpile			Class B only
	Compressive Strength	312					Class A
	Sieve Analysis	202	As required for method of test for acceptance tests.		1 sample for each 3,000 tons or 2,000 cu. yds. (1)	As specified.	Minimum 1 acceptance test per project on smaller projects.
	Sand Equivalent	217			1 sample for each 3,000 tons or 2,000 cu. yds. (1)	As specified.	
COMPLETED MIX	Compressive Strength	312	See California Test 312 Part II		See Section 6-27 of this manual.	See California Test 312 Part II	
	Cement Titration	338	See California Test 338 Part I		As necessary for acceptance (See REMARKS)	See California Test 338 Part I	Use minimum of 1 person full time during full-time operation.
	Relative Compaction	312 216 231			1 sample for each 3,000 tons or 2,000 cu. yds. (1).	See California Test 375.	
	Dimensions				As necessary for information.	In place after compaction.	
CEMENT	Compliance with Section 90 of Std. Spec.		8 lbs.	None with Certificate of Compliance (see REMARKS)	Each 120 tons of cement, 2 per day max.	Weigh hopper or screw leading to weigh hopper or from distributor if road-mixed.	If no Certificate of Compliance, sample at least 14 days prior to use for previously tested brands; 35 days for untested brands.
WATER	Compliance with Section 90 of Std. Spec.		1/2 gallon plastic jug with lined sealed lid.	At point of use(see REMARKS)	As necessary for acceptance (see REMARKS).	At point of use.	No sample necessary if from obviously suitable source such as municipal water supply. On-the-job wells should be tested.
Liquid Asphalt	In accordance with Special. Prov. & Std. Specs.		1 quart can	None with Certificate of Compliance. If no Certificate of Compliance, then from storage tank of distributor truck.	Each shipment.	Distributor truck.	

NOTE; (1) If material is uniform and well within specification limits, the frequency is decreased to 1 a day unless source is changed. Adjustments to testing frequencies shall be documented in the project files.

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ASPHALT TREATED PERMEABLE BASE (ATPB)

MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
AGGREGATE	Grading	202	50#	Materials, site, stockpile or plant bins.	2 times daily	Plant bins prior to mixing. See Note (1).	Recommend 1 acceptance test per day if 3 consecutive tests over 62.
	% crushed particles	205			As necessary for information and /or acceptance.		
	LA Rattler (500 rev.)	211			Once for each 4 hours of production.		
	Cleanness Value	227			1 for every 5 days paving, for 1st 10 days.		
	Film Stripping	302					
ASPHALT	In accordance with Std. Specs.		quart can	Test only if no cert. of compliance	One daily.		
COMPLETED MIX	Asphalt content	310 & 362	Two 1-quart cans		1 for every 4 hours of production		

CEMENT TREATED PERMEABLE BASE (CTPB)

AGGREGATE	Grading	202	See note (2)	See note (3)	Once for each 4 hours of production. See note (4).	One of the following locations listed in order of preference: a. Belt from weigh hopper to central or transit mixer. b. Belt which feeds batch plant bins immediately preceding the weigh hopper. c. Discharge gate of weigh hopper. A single sample 400+ lbs. into loader or dump truck; split to test portion required for grading analysis. d. Discharge gates of bins feeding the weigh hopper at batch plant. The location and method of sampling are to be determined and agreed upon by the engineer and the contractor. Once selected, the location and method of sampling are not to be changed during the life of a project, or so long as there is no change in plant's configuration or operation..	Recommend 1 acceptance test per day if 3 consecutive tests over 60
	LA Rattler (500 rev.)	211			One for each 4 hours of production. See Note (4).		
	Cleanness Value	227					
CEMENT	Compliance w/ Std. Specs & Spec. Prov.		8 lbs.	None with Cert. of Compliance	Once for each 120 tons, 2 per day mix.		
WATER	Compliance with/ Sec 90 of Std. Specs and Special Provisions		1/2 gallon plastic jug with lined sealed lid.				City water supplies for domestic use; need not be tested unless suspected chlorine or sulfate content. On-the-job wells are to be tested.

- NOTE:
- (1) For continuous mixing plants, sample from combined feed in advance of mixing.
 - (2) 75 # of 1' x No. 3/4" x No. 4. This material for test numbers 202, 211, and 227.
 - (3) From material site or stockpile; 60 days prior to use.
 - (4) Not required if P. C. C. from same source is being used on other work and test is being made there. No need to duplicate the test just for the sake of record. The actual test results may be used anywhere they are applicable.

				MISCELLANEOUS MATERIALS			
MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE	TESTS	REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
AGGREGATE BASE	% crushed Particles	205	100 # for initial samples. 50 # for control samples.	Materials site or stockpile.	As necessary for acceptance.	As specified	Minimum 1 acceptance test per project.
	Sieve Analysis	202			Every 3,000 tons or 2,000 cu. yds. (1).		Minimum 1 acceptance test per project on smaller projects.
	Durability Index	229			If initial source changes or new source developed.		
	R-Value	301			Every 3,000 tones of 2,000 cu. yds. (1)(2).		
	Sand Equivalent	217			Every 3,000 tones of 2,000 cu. yds. (1)		Minimum 1 acceptance test per project on smaller projects.
	Moisture	226			2 times daily if paid for by weight.	At time of weighing.	
	Relative Compaction	216 or 231	30#		As necessary for acceptance.	In place after compaction.	
	Dimensions				As necessary for information	Upon completion of layer.	
AGGREGATE SUBBASE	Sieve analysis	202	50 #	Material site or stockpile.	1 for every 3,000 tons or 2,000 cu. yds. (1).	As specified.	Minimum 1 acceptance test per project on smaller project. None if less than 300 tons.
	R-value	301			1 for every 3,000 tons or 2,000 cu. yds. (1) (2).		
	Sand equivalent	217			1 for every 3,000 tons or 2,000 cu. yds. (1).		
	Relative compaction	216 or 231	30#		As necessary for acceptance.	In place after compaction.	
	Dimensions				As necessary for information.	Upon completion of layer.	

- NOTE:
- (1) If material is uniform and well within specification limits, the frequency may be decreased to one a day unless source is changed. Adjustments to testing frequencies shall be documented in the project files.
 - (2) R-value testing may be waived when test records demonstrate that material from the same source, and having comparable grading and sand equivalent values, meets the minimum R-value requirements.

EXHIBIT 16-R
Size Frequency and Location of Sampling and Testing Tables

Local Assistance Procedures Manual

MISCELLANEOUS MATERIALS

				POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS			
MATERIAL OR PRODUCT		TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	REMARKS
IMPORTED BORROW		Relative Compaction	216 or 231			As required for acceptance.	Immediately after material is placed and compacted	
BASEMENT SOIL		R-Value	301	50 #	Test material below grading plane, both in cut and in fill.	As necessary for acceptance.	Prior to placement of cover material.	
		Relative Compaction	216 or 231	30 #			Immediately prior to placement of cover material.	
		Grade Tolerance					Grading plane.	
EMBANKMENT		Relative compaction	216 or 231	30 #			In place after compaction.	
LIME TREATMENT (1)	Soil or Aggregate to be Treated	Unconfined compressive strength	301	100 #	Native soils. Test each type of material to be treated.	If initial source changes.	Prior to beginning of lime treatment.	To determine appropriate lime content.
	COMPLETED MIX	Lime Content	338	20 #		As necessary for acceptance.	See California Test 338, Part I	
		Relative Compaction	216 & 231				In place after compaction.	
		Dimensions					In place after compaction.	
	LIME	Compliance with Special Provisions		1/2 gallon can with friction lid	None with Certificate of Compliance.	Each load delivered.	From distributor.	
EMULSION (CURING SEAL)	In accordance with Special Provisions and Standard Specifications		1/2 gallon plastic jug.	None with Certificate of Compliance. If no Certificate of Compliance, then from storage tank or distributor truck.	Each shipment.	Distributor truck.		

NOTE: (1) Not to be used for the lime treatment of AC aggregates.

				MISCELLANEOUS MATERIALS				
MATERIAL OR PRODUCT		TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS LOCATION OR TIME OF SAMPLING	ACCEPTANCE FREQUENCY OF SAMPLING	TESTS LOCATION OR TIME OF SAMPLING	REMARKS
PENETRATION TREATMENT	LIQUID ASPHALT	In accordance with applicable section of Std. Specs.		1 quart can	None with Certificate of Compliance.	Each shipment.	Plant storage tank or distributor.	
	SAND	Sieve Analysis	202			As necessary for acceptance.	As delivered to project.	
BITUMINOUS SEALS	PAVING ASPHALT	In accordance with applicable section of Std. Specs		Asphalts 1 quart can , Emulsion 1/2 gallon plastic jug	None with Certificate of Compliance.	Each shipment.	Storage tank or distributor	
	LIQUID ASPHALT	Binder distribution	339					
	ASPHALTIC EMULSION	LA Rattler	211		Stockpile	As necessary for acceptance..	As delivered to spread, equipment.	
	SCREENINGS	% crushed particles	205	50 #		Twice daily.		
		Sieve Analysis	202			As necessary for acceptance.		
		Film Stripping	302			Once daily		
		Cleanness Value	227			As necessary for acceptance	Prior to mixing	
		Sand Equivalent	217		Stockpile			
	SLURRY SEAL AGGREGATE	Sieve Analysis	202	25#				
		Film Stripping	302					
SOLID OR SEMI-SOLID AIR REFINED ASPHALT		In accordance with Std. Specs		3 #	Barrels or sacks.	Each 29 barrels or sacks.	Barrels or sacks.	

EXHIBIT 16-R
Size Frequency and Location of Sampling and Testing Tables

Local Assistance Procedures Manual

				MISCELLANEOUS MATERIALS			
MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
PERMEABLE MATERIAL	Sieve Analysis	202	150 #	Stockpile	1 daily, or as required for acceptance.	In place, at time of placing.	Minimum 1 acceptance test per project.
	Durability Index	229			If initial source changes or new source developed.	Material site or stockpile	
	Sand Equivalent	217			1 daily, or as required for acceptance.	In place, at time of placing.	Minimum 1 acceptance test per project.
STRUCTURE BACKFILL	Sieve Analysis	202	50 #	Materials site.	As required for acceptance.	At time of use	
	Sand Equivalent	217					
	Relative Compaction	216 & 231				In place after compaction.	
SLOPE PROTECTION	Size			Quarry	As required for acceptance (See REMARKS)	Upon delivery to job site or at time of placing.	Adequate size of slope protection documented by measuring or weighing the material.
	Apparent Specific Gravity	206					
	Absorption	206					
	Durability Index	229	75 #				
ASBESTOS SHEET PACKING			12" X 12"		1 each lot.	At delivery	Sample and test if not previously inspected at the source.
ASPHALT PLANK			Contact DNTM&R for instructions.		Contact DNTM&R for instructions.		
BARBED WIRE			3' length		Each 50 rolls or fraction	At time of use.	Sample and test if not previously inspected at the source. If less than 500 LF. of fence, see Note (1).
BOLTS AND HARDWARE			2 samples each diameters		Each lot.		Sample and test if not previously inspected at the source.

NOTE: (1) Resident Engineer may accept on the basis of visual examination provided the source has recently furnished similar material found to be satisfactory under the normal sampling and testing procedures of the Department. Place Resident Engineer's written approval in the project file.

				MISCELLANEOUS MATERIALS			
MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE	TESTS	REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
BRICK	Compliance with Specifications		10 full size		Contact DNTM&R for instructions.	At time of use	
CHAIN LINK FENCING			24" width		Each 50 rolls or fraction.		Sample and test if not previously inspected at the source. If less than 500 LF of fence, see note (1).
CONCRETE AND CLAY PIPE			Contact DNTM&R for instructions.		Contact DNTM&R for instructions.		Sample and test if not previously inspected at the source. If less than 100 LF. of fence, see Note (1).
JOINT FILLER EXPANSION			6" long full width of sheet		Each 1,000 sq. ft. not less than 2 per shipment.		Sample and test if not previously inspected at the source. If less than 100 sq. ft. see Note (1).
ELECTRICAL CONDUCTOR	Compliance with Specifications		2 each 3" long, include markings		Each type each lot.		Sample and test if not previously inspected at the source. Certificate of Compliance required for 5,000 volt cable.
GALVANIZED PIPE			1' length from each end of length tested of each size		Each 500 lengths or fraction	Distribution Warehouse.	Sample and test if not previously inspected at the source.
GEO-SYNTHETICS Filler, Reinf. & Paving Fabric S/R Fence, Etc.			1 piece, 3' x full width of roll		Each lot.		Certificate of Compliance required for each lot. Unroll at least 1 circumference before sampling.
JOINT SEAL, Type B			Contact DNTM&R				Sample and test if not previously inspected at the source.
JOINT SEALING COMPOUND 2-COMPONENT POLYSULFIDE POLYMER TYPE	Specification requirements		1 gallon of each component		1 sample from each component of each batch	From cans at job site.	
MOPPING ASPHALT	Compliance with Specification		1 quart		Each lot.	At time of use.	Sample and test if not previously inspected at the source.
PAINT	Compliance with Specification		For Br. or major Str. send an unopened 5 Gal. can. For misc. painting, 1 qt. (See Sec. 8-02)		Each batch		Unused portion of 5 gallon sample will be returned to job. See Section 8-02. If less than 20 gallons, see note (1).
PAVEMENT MARKERS	Compliance with Specification		20 Markers		1 Sample (20 markers) from each lot of 10,000		Sample and test if not previously inspected at the source
PLASTIC CONDUIT	Compliance with Specification		2" long from center of length		2 samples each size		Sample and test if not previously inspected at the source
RAISED BARS (PRECAST)	Compliance with Specification		1 unit or full size bar		Each lot		Sample and test if not previously inspected at the source
REINFORCING STEEL	Compliance with Specification		2 samples 30" except 36" for #14 & #18		As necessary for acceptance	Before use	Sample and test at job site

NOTE: (1) Resident Engineer may accept on the basis of visual examination provided the source has recently furnished similar material found to be satisfactory under the normal sampling and testing procedures of the Department. Place Resident Engineer's written approval in the project file.

EXHIBIT 16-R
Size Frequency and Location of Sampling and Testing Tables

Local Assistance Procedures Manual

MISCELLANEOUS MATERIALS

MATERIAL OR PRODUCT	TEST FOR	TEST NO.	SAMPLE SIZE & CONTAINER TYPE	POTENTIAL SOURCE TESTS	ACCEPTANCE	TESTS	REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	LOCATION OR TIME OF SAMPLING	
STEEL PRODUCTS			Contact DNTM&R for instructions.		Contact DNTM&R for instructions.	At time of use	Sample and test if not previously inspected at the source.
STRUCTURAL STEEL & MISC. IRON & STEEL			2 samples, 2" x 30" cut parallel to direction of rolling		Each heat or melt or 10 tons or fraction.		Sample and test if not previously inspected at the source
WATER-PROOFING MATERIALS		ASTM D173	1 sq. yd. of asphalt saturated cotton fabric		1 sample from each lot.	Manufacturer's stock or contractor yard.	Mesher of fabric shall be substantially open
		ASTM D449	5 pounds of asphalt				Contractor's stock must be kept covered.
		ASTM D41	1 quart of asphalt primer.				
WIRE MESH REINFORCING			3' x 3'		Each 10 tons or fraction.	At time of use.	Sample and test at if not previously inspected at the source. If less than 2 rolls, see note (1).
WIRE ROPE OR CABLE			Per Special Provisions or as instructed.		Per Special Provisions or as instructed. At time of use.		Sample and test if not previously inspected at the source.

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